

NON-PUBLIC?: N
ACCESSION #: 8711230158
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Dresden Nuclear Power Station, Unit 2 PAGE: 1 of 3

DOCKET NUMBER: 05000237

TITLE: Reactor Scram Due to Spurious Main Steam Line Low Pressure Signal
Caused by Vibration
EVENT DATE: 10/20/87 LER #: 87-032-00 REPORT DATE: 11/05/87

OPERATING MODE: N POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Robert J. Whalen Mechanical Systems Group Leader
TELEPHONE #: 815-942-2920 Ext. 462

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: JM COMPONENT: 63 MANUFACTURER: B070
REPORTABLE TO NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: On October 20, 1987, while Dresden Unit 2 was operating at 100% rated thermal power, Dresden Operating Surveillance (DOS) 1700-1, Main Steam Line (MSL) Radiation Monitor Scram and Isolation Functional Test, was being performed in accordance with Technical Specification Table 4.1.1 in order to verify proper operation of the MSL radiation monitor and isolation circuitry. At 0224 hours, while DOS 1700-1 was in progress, a primary containment Group I isolation and reactor scram occurred, due to a spurious half Group One isolation occurring coincident with the surveillance. Root cause was determined to be vibration of a MSL low pressure switch; the source of the vibration is believed to be the main turbine. In order to prevent recurrence, isolators were installed to make the MSL low pressure switches less susceptible to vibration-induced trips. Safety significance was minimal since the automatic isolation and scram logic functioned as designed. Although previous spurious low MSL pressure signals have been observed since the last refuel outage, these have not resulted in an automatic isolation or scram.

(End of Abstract)

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PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2527 MWt rated core thermal power, Energy Industry Identification System (EIIS) codes are identified in the text as (XX).

EVENT IDENTIFICATION:

Reactor scram due to spurious Main Steam (SB) Line (MSL) low pressure signal during performance of MSL radiation monitor (IL) surveillance.

A. CONDITIONS PRIOR TO EVENT:

Dresden Unit: 2 Event Date: 10/20/87 Event Time: 0224 Hour
Reactor Mode: N Mode Name: Run Power Level: 100%
Reactor Coolant System (RCS) Pressure: 1005 psig

B. DESCRIPTION OF EVENT:

On October 20, 1987, while Dresden Unit 2 was operating at 100% rated thermal power, Dresden operating Surveillance (DOS) 1700-1, Main Steam Line Radiation Monitor Scram and Isolation Functional Test, was being performed. This surveillance is performed in accordance with Technical Specification (T.S.) Table 4.1.1 in order to verify proper operation of the MSL radiation monitor scram and isolation circuitry. At 0224 hours, while the surveillance was in progress, a primary containment Group I isolation and reactor scram occurred.

Immediately prior to the reactor scram, a Reactor Protection System (RPS) Channel A half scram had been received from a C MSL radiation high high signal generated during performance of DOS 1700-1. A spurious RPS Channel B MSL low pressure signal was then received, which resulted in an automatic primary containment Group I isolation and initiated automatic closure of the Main Steam Isolation Valves (MSIVs). This generated an automatic scram on MSIV closure. The reactor Operator immediately responded in accordance with Dresden General Procedure (DGP) 2-3, Reactor Scram Procedure.

At 0233 hours, the isolation condenser was manually initiated at 1060 psig reactor pressure to provide reactor pressure control. At 0319 hours, when reactor pressure had been reduced to less than 600 psig, the reactor scram signal was reset. An investigation into the root cause was initiated.

C. APPARENT CAUSE OF EVENT:

This event is submitted in accordance with 10 CFR 50.73(a)(2)(iv), which requires the reporting of any automatic engineered safety feature actuation, including the RPS. The proximate cause of the Group I isolation and subsequent reactor scram was found to be the spurious RPS Channel B MSL low pressure signal, which occurred coincident with the Channel A Group I isolation and half scram received as part of the surveillance testing in progress. The root cause of the spurious MSL low pressure signal is believed to be vibration of instrument rack 2252-1, on which the Barksdale Model B2T-A12SS-GE-DS829 MSL pressure switches are mounted. The source of the instrument rack vibration is believed to be the main turbine; several spurious MSL low pressure signals have been observed since startup from the last refuel outage, when replacement of the low pressure turbine rotors was performed.

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D. SAFETY ANALYSIS OF EVENT:

The MSL low pressure isolation circuitry is designed to provide automatic isolation of the MSLs during a postulated MSL break. The isolation circuitry was operable; in fact this event demonstrated the automatic isolation function. The Reactor Operator responded immediately to this event in accordance with appropriate procedures, and manually initiated the isolation condenser to provide reactor pressure control. Had this action not been taken, the isolation condenser would have automatically initiated at a sustained reactor pressure of 1070 psig. Automatic electromagnetic relief valves are also provided, as well as a target rock safety/relief valve and safety valves, to ensure reactor pressure does not exceed design limits. Should automatic depressurization of the reactor vessel occur, low pressure emergency core cooling systems are available to ensure reactor inventory control if necessary. For these reasons, the safety significance of this event was minimal.

E. CORRECTIVE ACTIONS:

In order to prevent future spurious MSL low pressure signals due to vibrations of instrument rack 2252-1, a modification was performed to install vibration isolators for the instruments in order to make them less susceptible to vibration. Additionally, further balancing of the main turbine is under investigation.

F. PREVIOUS EVENTS:

Approximately 28 non-reportable events involving spurious Unit 2 MSL low

pressure signals due to vibration have been observed in recent months. However, none of these resulted in an automatic isolation and reactor scram, as only RPS Channel B was affected in each case. These events resulted in vibration measurements being performed at the instrument rack, and engineering of the vibration isolator modification described in Section E. above.

G. COMPONENT FAILURE DATA:

Although component failure of the MSL low pressure switches did not occur, the following data is provided for information.

Manufacturer: Barksdale

Nomenclature: Pressure Switch

Model Number: B2T-A12SS-GE-DS829

Mfg. Part Number: B2T-M12SSTC

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EVENT SUMMARY
AND
CAUSE CODES

FIGURE OMITTED - NOT KEYABLE (FORM)

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November 5, 1987

EDE LTR #87-748

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Licensee Event Report \$87-032-0, Docket #050237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(iv).

/s/ E.D. Eenigenburg
E.D. Eenigenburg
Station Manager
Dresden Nuclear Power Company

EDE/kjl

Enclosure

cc: A. Bert Davis, Regional Administrator, Region III
File/NRC
File/Numerical

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